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EXPERIMENT - 1

Object Oriented Programming Lab

Aim

Write a program to find whether a number is prime or not.

Syeda Reeha Quasar

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4C7

EXPERIMENT - 1

Aim:

Write a program to find whether a number is prime or not.

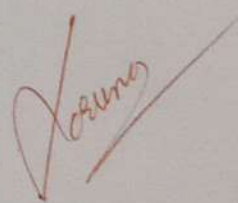
Source Code:

```
#include <iostream>
#include <math.h>
using namespace std;

bool isPrime(int n){
    if (n < 2) return false;
    for (int i = 2; i < n; ++i) {
        if ((n % i) == 0) return false;
    }
    return true;
}

bool isPrime1(int n){
    if (n < 2) return false;
    if (n % 2 == 0) return false;
    for (int i = 2; i < sqrt(n); ++i) {
        if ((n % i) == 0) return false;
    }
    return true;
}

int main() {
    cout << "Enter the number you wan to check whether prime or not";
    int n;
    cin >> n;
    cout << "result = " << isPrime(n);
    cout << "result = " << isPrime1(n);
    return 0;
}
```



Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ isPrime.cpp -o isPrime } ; if ($?) { .\isPrime }  
Enter the number you wan to check whether prime or not 23  
result = 1  
result = 1  
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ isPrime.cpp -o isPrime } ; if ($?) { .\isPrime }  
Enter the number you wan to check whether prime or not 18  
result = 0  
result = 0  
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ isPrime.cpp -o isPrime } ; if ($?) { .\isPrime }  
Enter the number you wan to check whether prime or not 101  
result = 1  
result = 1  
PS D:\sem 4\cpp\oops> 
```

EXPERIMENT - 2

Object Oriented Programming Lab

Aim

Write a program to take name, address as character string, age as int, salary as float and contains inline function to set the values and display them.

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EXPERIMENT - 2

Aim:

Write a program to take name, address as character string, age as int, salary as float and contains inline function to set the values and display them.

Source Code:

```
#include <iostream>
#include <string>
using namespace std;

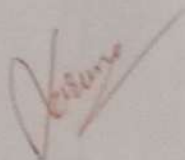
class details{
public:
    string name;
    string address;
    int age;
    float salary;

    void getData() {
        cout << "Enter name" << endl;
        getline(cin, name);
        cout << "Enter address" << endl;
        getline(cin, address);
        cout << "Enter age" << endl;
        cin >> age;
        cout << "Enter salary" << endl;
        cin >> salary;
    }

    void showdata();
};

void details :: showdata(){
    cout << "details of employee \n";
    cout << "name: " << name << endl;
    cout << "address: " << address << endl;
    cout << "age: " << age << endl;
    cout << "salary: " << salary << endl;
}
```

```
int main(){  
    details d;  
    d.getData();  
    d.showdata();  
    return 0;  
}
```



Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ employeeDetails.cpp -o employeeDetails } ; if ($?) { .\employeeDetails }
Enter name
Syeda Raeha Quasar
Enter address
Rohini, New Delhi - 110009
Enter age
28
Enter salary
700000
details of employee
name: Syeda Raeha Quasar
address: Rohini, New Delhi - 110009
age: 28
salary: 700000
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ employeeDetails.cpp -o employeeDetails } ; if ($?) { .\employeeDetails }
Enter name
raeha
Enter address
Rohini, Delhi
Enter age
28
Enter salary
900000
details of employee
name: raeha
address: Rohini, Delhi
age: 28
salary: 900000
PS D:\sem 4\cpp\oops>
```


EXPERIMENT - 3

Object Oriented Programming Lab

Aim

Using concept of function overloading, write function for calculating area of triangle, circle and rectangle.

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EXPERIMENT - 3

Aim:

Using concept of function overloading, write function for calculating area of triangle, circle and rectangle.

Source Code:

```
#include <iostream>
using namespace std;

int area(int l, int b){
    return l * b;
}

float area(float r){
    return 3.14 * r * r;
}

float area(float b, float h){
    return (b * h)/2;
}

int main(){
    int l, b;
    float r, ba, he;
    cout << "Enter length and breadth of rectangle" << endl;
    cin >> l >> b;
    cout << "Area of rectangle is: " << area(l, b) << endl;
    cout << "Enter radius for circle" << endl;
    cin >> r;
    cout << "Area of circle is: " << area(r) << endl;
    cout << "Enter base and height of triangle" << endl;
    cin >> ba >> he;
    cout << "Area of triangle is: " << area(ba, he) << endl;
    return 0;
}
```


Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ Areas.cpp -o Areas } ; if ($?) { .\Areas }
Enter length and breadth of rectangle
2 3
Area of rectangle is: 6
Enter radius for circle
2
Area of circle is: 12.56
Enter base and height of triangle
12 3
Area of triangle is: 18
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ Areas.cpp -o Areas } ; if ($?) { .\Areas }
Enter length and breadth of rectangle
3 12
Area of rectangle is: 36
Enter radius for circle
5
Area of circle is: 78.5
Enter base and height of triangle
4 12
Area of triangle is: 24
PS D:\sem 4\cpp\oops> |
```

Varun

EXPERIMENT - 4

Object Oriented Programming Lab

Aim

Create a class student which have data members as name, branch, roll no., age, sex, five subjects. Display the name of the student and his percentage who has more than 70%.

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4C7

EXPERIMENT - 4

Aim:

Create a class student which have data members as name, branch, roll no., age, sex and marks in five subjects. Display the name of the student and his percentage who has more than 70%.

Source Code:

```
#include <iostream>
#include <string>

using namespace std;

class studentRecord{
    private:
        string name;
        string branch;
        int rollNo;
        int age;
        char sex[15];
        float marks;

    public:
        void getDetails();
        void check();
        void showDetails();
        void details();
};

void studentRecord::getDetails(){
    cout << "Enter name" << endl;
    cin >> name;
    cout << "Enter branch" << endl;
    cin >> branch;
    cout << "Enter Roll no. " << endl;
    cin >> rollNo;
    cout << "Enter age" << endl;
    cin >> age;
    cout << "Enter sexuality" << endl;
    cin >> sex;
    cout << "Enter total marks scored in 5 subjects" << endl;
```

```

        cin >> marks;
    }

    void studentRecord::showDetails(){
        cout << "Name: " << name << endl;
        cout << "Percentage: " << (marks/5) << "%" << endl;
    }

    void studentRecord::check(){
        if (((marks/5)) > 70) {
            showDetails();
        }
    }

    void studentRecord::details(){
        cout << "name: " << name << ", branch: " << branch << ", roll no.: " << rollN
o << ", age: " << age << ", sex: " << sex << ", marks: " << marks << endl;
    }

    int main(int argc, char const *argv[]){
        int students;
        cout << "Enter the no. of students: ";
        cin >> students;
        studentRecord studentsArr[students];
        for (int i = 0; i < students; ++i) {
            cout << "For student" << i + 1 << " : " << endl;
            studentsArr[i].getDetails();
        }

        cout << "\nYou have entered:" << endl;
        for (int i = 0; i < students; i++) {
            studentsArr[i].details();
        }

        cout << "\n\n\n" << endl;

        cout << "Students having marks greater than 70% are: " << endl;
        for (int i = 0; i < students; i++) {
            studentsArr[i].check();
        }
    }
}

```

Karun

Output:

```

PS D:\sam 4\cpp\loops> cd "d:\sam 4\cpp\loops\" ; if ($?) { g++ studentRecord.cpp -o studentRecord } ; if ($?) { .\studentRecord }
Enter the no. of students: 5
For student1 :
Enter name
resha
Enter branch
cse
Enter Roll no.
1
Enter age
19
Enter sexuality
F
Enter total marks scored in 5 subjects
490
For student2 :
Enter name
saba
Enter branch
cse
Enter Roll no.
2
Enter age
18
Enter sexuality
F
Enter total marks scored in 5 subjects
490
For student3 :
Enter name
manav
Enter branch
cse
Enter Roll no.
3
Enter age
19
Enter sexuality
M
Enter total marks scored in 5 subjects
350
For student4 :
Enter name
shruti
Enter branch
ece
Enter Roll no.
4
Enter age
20
Enter sexuality
F
Enter total marks scored in 5 subjects
400
For student5 :
Enter name
rohan
Enter branch
ece
Enter Roll no.
5
Enter age
20
Enter sexuality
M
Enter total marks scored in 5 subjects
300

You have entered:
name: reshha, branch: cse, roll no.: 1, age: 19, sex: F, marks: 490
name: saba, branch: cse, roll no.: 2, age: 18, sex: F, marks: 490
name: manav, branch: cse, roll no.: 3, age: 19, sex: M, marks: 350
name: shruti, branch: ece, roll no.: 4, age: 20, sex: F, marks: 400

```

You have entered:

name: reeha, branch: cse, roll no.: 1, age: 19, sex: F, marks: 490
name: saba, branch: cse, roll no.: 2, age: 18, sex: F, marks: 498
name: manav, branch: mae, roll no.: 3, age: 19, sex: M, marks: 350
name: shruti, branch: eee, roll no.: 4, age: 20, sex: F, marks: 400
name: rohan, branch: ece, roll no.: 5, age: 20, sex: M, marks: 300

Students having marks greater than 70% are:

Name: reeha

Percentage: 98%

Name: saba

Percentage: 99.6%

Name: shruti

Percentage: 80%

PS D:\sem 4\cpp\oops> █

Koruna

EXPERIMENT - 5

Object Oriented Programming Lab

Aim

Write a program for multiplication of two matrices using OOP.

Syeda Reeha Quasar

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4C7

EXPERIMENT - 5

Aim:

Write a program for multiplication of two matrices using OOP.

Source Code:

```
#include <iostream>

using namespace std;

class MatrixMultiplication{
public:
    int a[3][3];
    int b[3][3];
    int c[3][3];

    void InputMatrix();
    void multiply();
    void result();
};

void MatrixMultiplication::InputMatrix(){
    cout << "Enter the values for the first 3 x 3 matrix row wise" << endl;
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++)
        {
            cin >> a[i][j];
        }
    }
    cout << "Enter the values for the second 3 x 3 matrix row wise" << endl;
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            cin >> b[i][j];
        }
    }
}

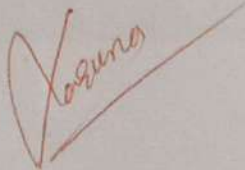
void MatrixMultiplication::multiply(){
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            c[i][j]=0;
        }
    }
}
```



```
        for (int k = 0; k < 3; k++) {
            c[i][j] += a[i][k] * b[k][j];
        }
    }
}

void MatrixMultiplication::result(){
    cout << "The Resultant Matrix is: \n";
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            cout << " " << c[i][j];
        }
        cout << endl;
    }
}

int main(){
    MatrixMultiplication x;
    cout << "Program to multiply 2 3X3 matrices: " << endl;
    x.InputMatrix();
    x.multiply();
    x.result();
    return 0;
}
```



Output;

```

PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ matrixMultiplications.cpp -o matrixMultiplications } ; if ($?) { .\matrixMulti
iplications }
Program to multiply 2 3X3 matrices:
Enter the values for the first 3 x 3 matrix row wise
1 2 3
4 5 6
7 8 9
Enter the values for the second 3 x 3 matrix row wise
2 2 2
2 2 2
2 2 2
The Resultant Matrix is:
12 12 12
30 30 30
48 48 48
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ matrixMultiplications.cpp -o matrixMultiplications } ; if ($?) { .\matrixMulti
iplications }
Program to multiply 2 3X3 matrices:
Enter the values for the first 3 x 3 matrix row wise
1 2 3
4 5 6
7 8 9
Enter the values for the second 3 x 3 matrix row wise
1 2 3
4 5 6
7 8 9
The Resultant Matrix is:
30 36 42
66 81 96
102 126 150
PS D:\sem 4\cpp\oops>

```

```

PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ matrixMultiplications.cpp -o matrixMultiplications } ; if ($?) { .\matrixMultiplications }
Program to multiply 2 3X3 matrices:
Enter the values for the first 3 x 3 matrix row wise
1 2 3
4 5 6
7 8 9
Enter the values for the second 3 x 3 matrix row wise
1 1 1
1 1 1
1 1 1
The Resultant Matrix is:
6 6 6
15 15 15
24 24 24
PS D:\sem 4\cpp\oops>

```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ Areas.cpp -o Areas } ; if ($?) { .\Areas }
Enter length and breadth of rectangle
2 3
Area of rectangle is: 6
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4 12
Area of triangle is: 24
PS D:\sem 4\cpp\oops> █
```

